

enGauge 21st Century Skills

For 21st Century Learners

Our children live in a global, digital world – a world transformed by technology and human ingenuity. Many of today’s youngsters are comfortable using laptops, instant messaging, chat rooms, and cell phones to connect to friends, family, and experts in local communities and around the globe. Given the rapid rate of change, the vast amount of information to be managed, and the influence of technology on life in general, students need to acquire different, evolving skill sets to cope and to thrive in this changing society.

The federal *No Child Left Behind* legislation establishes technology literacy as a core foundation for learning, calling for academic excellence in the context of 21st century technologies.

The enGauge 21st Century Skills go a step further. Advances in the cognitive sciences show that learning increases significantly when students are engaged in academic study through authentic, real-world experiences. The enGauge 21st Century Skills build on extensive bodies of research – as well as on calls from government, business, and industry for higher levels of workplace readiness – to define clearly what students need to thrive in today’s Digital Age.

This work is intended to provide the public, business, industry, and educators with a common understanding of what 21st Century Skills are, why they are important, and how they will contribute to the success of students as individuals striving to live, learn, and work in the Digital Age.

NCREL
North Central Regional Educational Laboratory

METIRI
Group

The enGauge 21st Century Skills:

Digital-Age Literacies

As society changes, the skills needed to deal with the complexities of life also change. Major new studies now define literacy as the ability to use “digital technology, communications tools, and/or networks to access, manage, integrate, evaluate, and create information in order to function in a knowledge society” (ICT Literacy Panel, 2002).

- **Basic Literacy:** Can students demonstrate language proficiency (in English) and numeracy at levels necessary for success on the job and in a digital-age society?
- **Scientific Literacy:** Do students have the knowledge and understanding of scientific concepts and processes required for personal decision-making, participation in civic and cultural affairs, and economic productivity?
- **Economic Literacy:** Can students identify economic issues; analyze incentives; examine the consequences of changes in economic conditions and public policies; collect and organize economic evidence; and weigh costs against benefits?
- **Technological Literacy:** Do students know what technology is, how it works, what purposes it can serve, and how it can be used efficiently and effectively to achieve specific goals?
- **Visual Literacy:** Can students interpret, use, appreciate, and create images and video using both conventional and 21st century media in ways that advance thinking, decision-making, communication, and learning?
- **Information Literacy:** Are students able to evaluate information across a range of media; recognize when information is needed; locate, synthesize, and use it effectively; and accomplish this using technology, communication networks, and electronic resources?
- **Multicultural Literacy:** Can students understand and appreciate similarities and differences between the customs, values, and beliefs of their own culture and the cultures of others?
- **Global Awareness:** Do students recognize and understand relationships among international organizations, nation-states, public and private economic entities, socio-cultural groups, and individuals across the globe?

Inventive Thinking

Experts agree: As technology becomes more prevalent in our everyday lives, cognitive skills become increasingly critical. “In effect, because technology makes the simple tasks easier, it places a greater burden on higher-level skills” (ICT Literacy Panel, 2002).

- **Adaptability/Managing Complexity:** Can students modify their thinking, attitudes, or behaviors to be better suited to current or future environments? Can they handle multiple goals, tasks, and inputs while understanding and adhering to organizational or technological constraints of time, resources, and systems?
- **Self-Direction:** Are students able to set goals related to learning, plan for the achievement of those goals, independently manage time and effort, and independently assess the quality of learning and any products that result from the learning experience?
- **Curiosity:** Do students have a desire to know or a spark of interest that leads to inquiry?
- **Creativity:** Are students able to bring something into existence that is genuinely new and original, whether personally (original only to the individual) or culturally (where the work adds significantly to a domain of culture as recognized by experts)?
- **Risk-taking:** Are students willing to make mistakes, advocate unconventional or unpopular positions, or tackle challenging problems without obvious solutions, such that their personal growth, integrity, or accomplishments are enhanced?
- **Higher-Order Thinking and Sound Reasoning:** Are students adept at cognitive processes of analysis, comparison, inference/interpretation, evaluation, and synthesis, as applied to a range of academic domains and problem-solving contexts?

Will your students thrive in this Digital Age?

Effective Communication

According to the 21st Century Literacy Summit, “information and communications technologies are raising the bar on the competencies needed to succeed in the 21st century” (2002). Both researchers and the business community agree: effective communication skills are essential for success in today’s knowledge-based society.

- **Teaming and Collaboration:** Can students cooperatively interact with one or more individuals, working with others to solve problems, create novel products, or learn and master content?
- **Interpersonal Skills:** Are students able to read and manage their own and others’ emotions, motivations, and behaviors during social interactions or in social-interactive contexts?
- **Personal Responsibility:** Do students demonstrate a depth and currency of knowledge about legal and ethical issues related to technology, combined with an ability to apply this knowledge to achieve balance, integrity, and quality of life as citizens, family and community members, learners, and workers?
- **Social and Civic Responsibility:** Can students manage technology and govern its use in ways that promote the public good and protect society, the environment, and democratic ideals?
- **Interactive Communication:** Do students generate meaning through exchanges using a range of contemporary tools, transmissions, and processes?

High Productivity

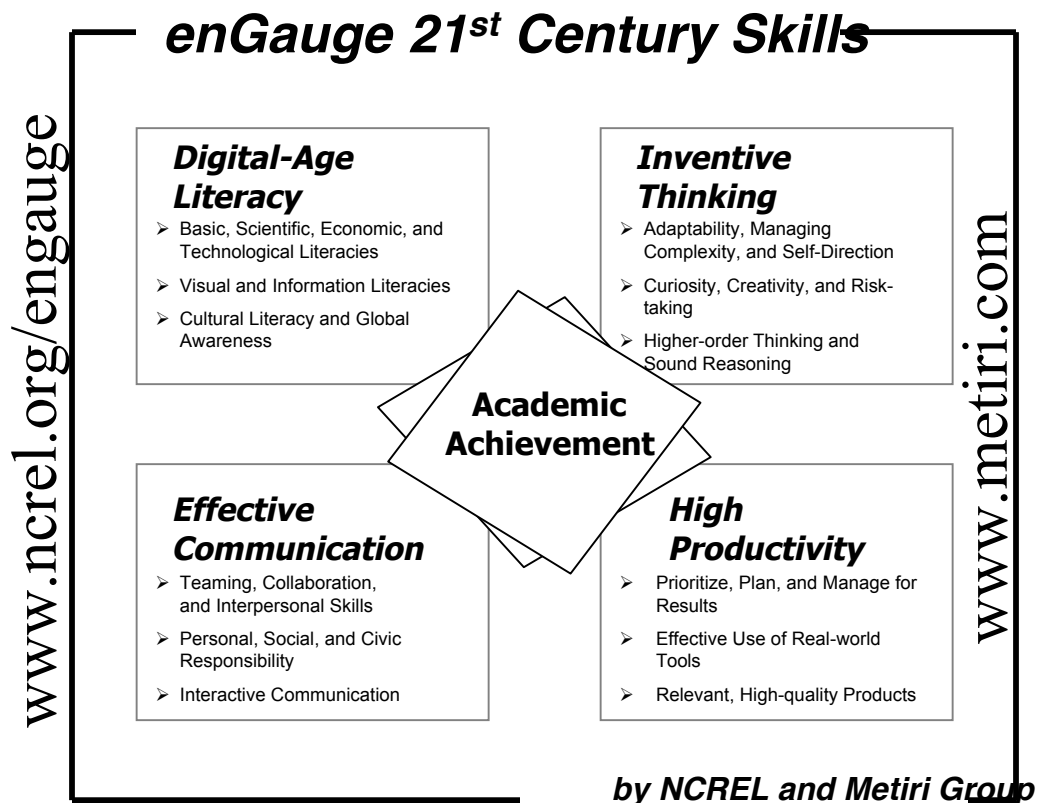
“We are living in a new economy,” says the U.S. Department of Labor. In the Digital Age, success is “powered by technology, fueled by information, and driven by knowledge.” Though not yet a high-stakes focus of schools, these skills often determine whether a person succeeds or fails in today’s workforce.

- **Prioritizing, Planning, and Managing for Results:** Do students organize to efficiently achieve the goals of specific projects or problems?
- **Effective Use of Real-World Tools:** Can students use real-world tools (i.e. the hardware, software, networking, and peripheral devices used by Information Technology (IT) workers to accomplish 21st century work) to communicate, collaborate, solve problems, and accomplish tasks?
- **Ability to Produce Relevant, High-Quality Products:** Are students adept at developing intellectual, informational, or material products that serve authentic purposes and occur as a result of their using real-world tools to solve or communicate about real-world problems? These products include persuasive communications in any media (print, video, the Web, verbal presentation), synthesis of resources into more useable forms (databases, graphics, simulations), or refinement of questions that build upon what is known to advance one’s own and others’ understanding.

Methodology:

The *enGauge 21st Century Skills* were developed through a process that included literature reviews, research on emerging characteristics of the Net-Generation, a review of current reports on workforce trends from business and industry, analysis of nationally recognized skill sets, input from educators, data from educator surveys, and reactions from constituent groups. Some of these sources are listed below. For a full list of sources and cross-matches to national skill sets, please see the full report at: www.ncrel.org/engauge/skills/skills.htm.

- **National Education Technology Standards**, 2000, International Society for Technology in Education. Available at: www.cnets.iste.org.
- **SCANS: What Work Requires of School**, 1991, Secretary's Commission on Achieving Necessary Skills, U.S. Department of Labor.
- **Standards for Technological Literacy, Content for the Study of Technology**, 2000, International Technology Education Association. Available at: www.iteawww.org.
- **21st Century Literacy Summit**, 2002, Bertelsmann and AOL Time Warner Foundations, Berlin, Germany. Available at: www.21stcenturyliteracy.org.
- **FIT: Being Fluent With Information Technology**, 1999, Committee on Information Technology Literacy, National Research Council.
- **Information Literacy Standards for Student Learning**, 1998, American Association of School Librarians (AASL), Association of Educational Communications Technology (AECT), and American Library Association (ALA).
- **Technically Speaking: Why All Americans Need to Know More About Technology**, 2002. National Academy of Engineering & the National Research Council. Available at: www.nae.edu/nae/techlithome.nsf.
- **Preparing Students for the 21st Century**, 1996, American Association of School Administrators.
- **Digital Transformation: A Framework for ICT Literacy**, 2002. Report by the International Information and Communication Technologies (ICT) Literacy Panel for the Educational Testing Service (ETS). Available at: www.ets.org/research/ictliteracy/index.html.
- **How People Learn: Brain, Mind, Experience, and School**, 2000. Bransford, J., Brown, A. & Cocking, R., Eds. Available at: www.nap.edu/html/howpeople1/.



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